

UCT-0048

### REMARKS

Claims 1-17 are pending in the present Application. No claims have been canceled, amended, or added, leaving claims 1-17 for consideration upon entry of the present Response. Claims are presented in this Response for the Examiner's convenience. Applicants respectfully request reconsideration and allowance of the claims in view of the following remarks.

#### Double Patenting

Claims 1-9 and 16-17 stand provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 20-23 of copending Application No. 10/193,598 (Sotzing et al.; hereinafter "the '598 application"). Applicants respectfully traverse this rejection.

The Examiner alleged that the independent claims in the instant application recite similar limitations as that of the claims in the '598 application and the claims would have been obvious over each other. Specifically, the Examiner alleged that the reacting recited in claim 20 of the '598 application is the genus to the species of electrochemically reacting in claim 1 of the instant application. Applicants respectfully traverse this rejection because the '598 application and the instant application are different from each other.

Claim 1 of the instant application and claim 20 of the '598 application claim very different polymerization techniques. Claim 1 of the instant application claims a process comprising electrochemically reacting a monomeric composition comprising thieno[3,4-b]thiophene to form a polymer. On the other hand, claim 20 of the '598 application claims a process comprising chemically reacting thieno[3,4-b]thiophene with a chemical oxidant to form polymers.

Chemical oxidation and electrochemical oxidation are two different types of reactions. In chemical oxidation reactions, both oxidizing agent and reducing agent have to be present. On the other hand, no oxidizing agent is necessary in electrochemical reactions and the oxidation is achieved by a working electrode. Moreover, oxidation reaction conditions such as temperature, reaction time, and additional reactants can be very different between chemical and electrochemical reactions. For example, electrochemical reactions performed in an electrochemical cell typically require an electrolyte and the appropriate electrodes. Chemical

UCT-0048

oxidation, meanwhile, does not require either an electrolyte or an electrode, rather a chemical oxidant in used. Therefore, it would not have been obvious for a person of ordinary skill in the art to use an electrochemical polymerization technique required in instant claim 1 in view of the chemical oxidation of the '598 application.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the obviousness-type double patenting rejections.

Claim Rejections Under 35 U.S.C. § 102(a)

Claims 1-3 and 5-8 stand rejected under 35 U.S.C. § 102(a), as allegedly anticipated by Lee et al. *Macromolecules* 2001, 34, 5746-5747 (hereinafter "Lee"). Applicants respectfully traverse this rejection.

Attached you will find a Declaration by Gregory Allen Sotzing, an inventor of the present application. As stated in the Declaration, Gregory Allen Sotzing is an author of the Lee article and that the article is describing his own work. Furthermore, Kyunghoon Lee, the second author of the Lee article, was working under Dr. Sotzing's direction. Accordingly, it is respectfully requested that Lee be removed as a §102 reference altogether. (See MPEP 715.01(c) I.)

Claim Rejections Under 35 U.S.C. § 103(a)

Claims 4 and 9 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over Lee. Applicants respectfully traverse this rejection.

In view of the comments made above and the Declaration by Gregory Allen Sotzing, the Lee reference should be removed from consideration as a §102 reference. Therefore, Applicants respectfully request reconsideration and removal of the § 103(a) rejections against these claims.

Claims 10-12 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over Lee in view of Lazzaroni et al. (U.S. Patent No. 4,663,001; hereinafter "Lazzaroni"). Applicants respectfully traverse this rejection.

UCT-0048

For an obviousness rejection to be proper, the Examiner must meet the burden of establishing a *prima facie* case of obviousness, i.e., that all elements of the invention are disclosed in the prior art. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988); *In Re Wilson*, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970); *Amgen v. Chugai Pharmaceuticals Co.*, 927 U.S.P.Q.2d, 1016, 1023 (Fed. Cir. 1996).

In view of the comments made above and the Declaration by Gregory Allen Sotzing, the Lee reference should be removed from consideration as a §102 reference. The remaining reference, Lazzaroni, generally discloses that electroconductive polymers can be derived from heterocyclic polycyclic monomers formed of at least two cycles of five condensed members, each cycle containing one heteroatom. Applicants respectfully argue that Lazzaroni fails to teach or suggest each and every limitation of claims 10-12. Claims 10-12 each ultimately depend from independent claim 1. Claim 1 is directed to a process of electrochemically reacting a monomeric composition comprising thieno[3,4-b]thiophene, to form a polymeric composition comprising units derived from the thieno[3,4-b]thiophene. Lazzaroni does disclose thieno[2,3-b]thiophene. However, thieno[3,4-b]thiophene and thieno[2,3-b]thiophene are structurally different compounds, having very different chemical properties and electrochemical reactivities. Thus a process of electrochemically reacting thieno[3,4-b]thiophene is not taught or suggested by Lazzaroni. As Lazzaroni fails to teach or suggest a process of electrochemically reacting a monomeric composition comprising thieno[3,4-b]thiophene, reconsideration and removal of the rejection are respectfully requested.

Claims 13 and 14 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over Lee in view of Lazzaroni, and further in view of Jonas et al. (U.S. Patent No. 4,959,430; hereinafter "Jonas '430"). Applicants respectfully traverse this rejection.

In view of the comments made above and the Declaration by Gregory Allen Sotzing, the Lee reference should be removed from consideration as a §102 reference. Jonas '430 generally discloses polythiophenes obtained from the polymerization of monomers having the following structure:

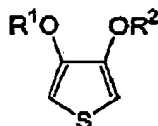
UCT-0048



wherein X denotes an optionally substituted C<sub>1</sub>-C<sub>4</sub>-alkylene radical. Neither Lazzaroni nor Jonas '430 teaches or suggests a process of electrochemically reacting a monomeric composition comprising thieno[3,4-b]thiophene, to form a polymeric composition comprising units derived from the thieno[3,4-b]thiophene. Accordingly, Lazzaroni and Jonas '430, taken alone or combined, fail to teach each and every limitation required by claims 13 and 14. Reconsideration and removal of the rejection is respectfully requested.

Claim 15 stands rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over Lee in view of Lazzaroni, and further in view of Jonas et al. (U.S. Patent No. 4,910,645; hereinafter "Jonas '645"). Applicants respectfully traverse this rejection.

In view of the comments made above and the Declaration by Gregory Allen Sotzing, the Lee reference should be removed from consideration as a §102 reference. Jonas '645 generally discloses polythiophenes obtained from the polymerization of monomers having the following structure:



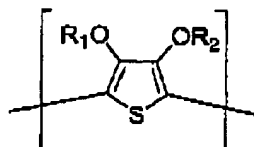
in which R<sup>1</sup> and R<sup>2</sup> stand for hydrogen or a C<sub>1</sub>-C<sub>4</sub>-alkyl, phenyl, or substituted phenyl groups. Neither Lazzaroni nor Jonas '645 teaches or suggests thieno[3,4-b]thiophene, let alone teaching or suggesting a process of electrochemically reacting a monomeric composition comprising thieno[3,4-b]thiophene, to form a polymeric composition comprising units derived from the thieno[3,4-b]thiophene which is required by independent claim 1. Claim 15 ultimately depends from claim 1. Accordingly, reconsideration and removal of the rejection is respectfully requested.

UCT-0048

Claims 16 and 17 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over Lee in view of Jonas et al. (U.S. Patent No. 5,300,575; hereinafter "Jonas '575").

Applicants respectfully traverse this rejection.

In view of the comments made above and the Declaration by Gregory Allen Sotzing, the Lee reference should be removed from consideration as a §102 reference. The polythiophenes of Jonas '575, have the structure



These substituted polythiophenes are chemically distinct from polymers comprising units derived from thieno[3,4-b]thiophene. Therefore, Jonas '575 does not teach or suggest the use of thieno[3,4-b]thiophene to form electroconductive polymers. Furthermore, Jonas '575 does not teach or suggest electrochemically reacting a monomeric composition comprising thieno[3,4-b]thiophene, to form a polymeric composition comprising units derived from the thieno[3,4-b]thiophene. Thus, Jonas '575 fails to teach or suggest all of the limitations required by claims 16-17.

Accordingly, Applicants respectfully request reconsideration and removal of the §103(a) rejections regarding claims 4 and 9-17.

UCT-0048

It is believed that the foregoing remarks fully comply with the Office Action and that the claims herein should now be allowable to Applicants. Accordingly, reconsideration and allowance are requested.

If there are any additional charges with respect to this Response or otherwise, please charge them to Deposit Account No. 06-1130.

Respectfully submitted,

CANTOR COLBURN LLP

By



Roberta Pelletier  
Registration No. 46,372  
Yong Zhao  
Registration No. 57,014

Date: March 23, 2006  
CANTOR COLBURN LLP  
55 Griffin Road South  
Bloomfield, CT 06002  
Telephone (860) 286-2929  
Facsimile (860) 286-0115  
Customer No.: 23413